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IS 15771 (2008): Packaging - Complete, filled transport packages and unit loads - Impact test by rotational drop [TED 24: Transport Packages]

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पैकेजिंग — सम्पूर्ण, भरित परिवहन पैकेज और इकाई भार — धूर्णी पात द्वारा संघटट परीक्षण

Indian Standard

PACKAGING — COMPLETE, FILLED TRANSPORT PACKAGES AND UNIT LOADS — IMPACT TEST BY ROTATIONAL DROP

ICS 55.180.40

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2008

Price Group 2

Food Additives Sectional Committee, FAD 8

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

With the increased production of processed foods, manufacturers have started adding a large number of substances, generally in small quantities, to improve the appearance, flavour, texture or storage properties of the processed foods. As impurities in these substances have been found to be harmful, it is necessary to have a strict quality control of these food additives. Potassium nitrate, is widely used as a preservative in meat and meat products and is permitted under the *Prevention of Food Adulteration Rules,* 1955. This compound is known to have some toxicity. This standard would help in checking purity which requires to be checked at the stage of manufacture, for it is extremely difficult (and in many cases impossible) to detect the impurity once these substances are added to the processed foods.

This standard was first published in 1968 and later revised in 1997 based on the then existing JECFA Specification and EEC standards. This standard is being revised taking into consideration the latest publication for potassium nitrate issued by JECFA. In this revision, the limit for nitrite content has been made more stringent to align with the international requirements and corresponding method of test has also been revised and updated.

Due consideration has also been given to the *Prevention of Food Adulteration Rules,* 1955 and *Standard of Weights & Measures (Packaged Commodities) Rules*, 1977. However, this standard is subject to restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PACKAGING — COMPLETE, FILLED TRANSPORT PACKAGES AND UNIT LOADS — IMPACT TEST BY ROTATIONAL DROP

1 SCOPE

This standard specifies methods for carrying out a rotational impact test on complete, filled transport packages or unit loads, by dropping. It may be performed either as a single test to investigate the effects of rotational impact or as part of a sequence of tests designed to measure the ability of a package or unit load to withstand a distribution system that includes a rotational impact hazard.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
7030 : 1988	Identification of parts for complete, filled transport packages when testing (*first revision*)
7031 : 2002	Method of conditioning for testing of complete, filled transport packages (*second revision*)

3 TERM(S)

For the purpose of this standard, the following term shall apply.

3.1 Test Item — Complete, filled transport package or unit load.

4 PRINCIPLE

4.1 One edge or corner of the test item is raised to a predetermined height above a rigid impact surface, the opposite edge or corner resting either on the impact surface, or on one or two blocks of specified height.

4.2 The test item is then released to fall freely and impact the rigid impact surface.

5 APPARATUS

5.1 Lifting Arrangement — Equipment to raise an edge or corner of the test item to the test height within ±2 percent, and support it in a stable position for the test.

5.2 Means of Holding the Test Item — A means of holding the test item prior to release in its predetermined attitude.

5.3 Release Mechanism — Release mechanism, to release the test item in such a way that its free fall is not obstructed by any part of the apparatus before striking the impact surface.

5.4 Supporting Blocks — Rigid block(s) of suitable height(s) for supporting edges or corners as required.

5.5 Impact Surface — Impact surface, horizontal and flat, massive enough to be immovable and rigid enough to be non-defromable under the test conditions.

The impact surface provided should be:

a) integral with a mass at least 50 times that of the heaviest test item to be tested;

b) flat, such that no two points on its surface differ in level by more than 2 mm;

c) rigid, such that it will not be deformed by more than 0.1 mm when an area of 100 mm^2 is loaded statically with 10 kg anywhere on the surface; and

d) sufficiently large to ensure that the test item falls entirely upon the surface.

6 TEST ITEM PREPARATION

6.1 The test item shall normally be filled with its intended contents. However, simulated or substituted contents may be used, provided that the dimensions and physical properties of such contents are as close as possible to those of the intended contents.

6.2 Ensure that the test item is closed as if ready for distribution. If simulated or substituted contents are used, ensure that the normal method of closure is still employed.

7 CONDITIONING

The test item shall be conditioned in accordance with one of the conditions specified in IS 7031.

8 PROCEDURE

8.1 General

8.1.1 Whenever possible the test shall be carried out in the same atmospheric conditions as used for conditioning, particularly where this is critical to the materials or application of the package. In other circumstances, the test shall be carried out in atmospheric conditions which are as near as practicable to those used for conditioning.

8.1.2 Select the method(s) of test by identifying each edge face or corner to be impacted.

8.2 Method A — Face Impact Test — Drop Flat on Face by Tilting About One Edge

With one edge of the face under test resting on the impact surface, raise the opposite edge of the face under test to the predetermined height (h_c) and release the test item to fall freely (*see* Fig. 1).

8.3 Method B — Edge Impact Test — Drop on Edge by Tilting About Parallel Edge

With one edge of the test item supported on a block of specified height (h_1), as near as practicable to the edge of the block, and within 10 cm from the edge, raise the opposite edge to the predetermined height (h_c) and release the test item to fall freely (*see* Fig. 2).

8.4 Method C1 — Corner Impact Test — Drop on Corner by Tilting on Two Blocks

8.4.1 Place one corner on a block of specified height (h_1). Place an adjacent corner on a second block of specified height (h_2), different from (h_1), both corners being located as near as practicable to the edges of these supporting blocks and within 10 cm.

8.4.2 Raise the corner diagonally opposite to that supported on the higher of the two blocks, to the predetermined height (h_c) and release the test item to fall freely (*see* Fig. 3). Alternatively, where this method is not practicable, the method described in **8.5** may be used.

NOTE — The results from the two methods might not be identical.

8.5 Method C2 — Corner Impact Test — Drop on Corner by Tilting on One Block

Place one corner of the test item supported on a block of specified height (h_1), as near as practicable to the edge of the block, but within 10 cm of the edge. Raise the diagonally opposite corner to the predetermined height (h_c) and release the test item to fall freely (*see* Fig. 4).

NOTES

1 Care should be taken to ensure that the test item is supported in a stable predetermined position prior to release.

2 This test may have low reproducibility.

9 TEST REPORT

The test report, shall include:

a) reference to this standard;

b) name and address of testing laboratory and name and address of the customer;

c) unique identification of report;

d) date of receipt of the test items and date of test;

e) name, title and signature of persons accepting responsibility for the test report;

f) a statement to the effect that the test results relate only to the test items tested;

g) a statement that the report shall not be reproduced, except in full, without the written approval of the testing laboratory;

h) full description including dimensions, structural and material specifications of the test item, its fittings, cushioning, blocking, closure and reinforcing arrangements, mass of test item and the mass of contents, in kilogram;

j) description of contents;

k) for each test the face edge or corner tested, the method, the height of fall and the number of drops;

m) height(s) of the supporting block(s), if used;

n) any deviation from the test method described in this standard;

p) a record of the results, including any observations which assists in the correct interpretation, for example, whether or not the test item rolled, or was restrained from rolling;

q) climatic conditions in the test area at the time of the test as given in IS 7031; and

r) attitudes in which the test item was tested, using the method of identification given in IS 7030.

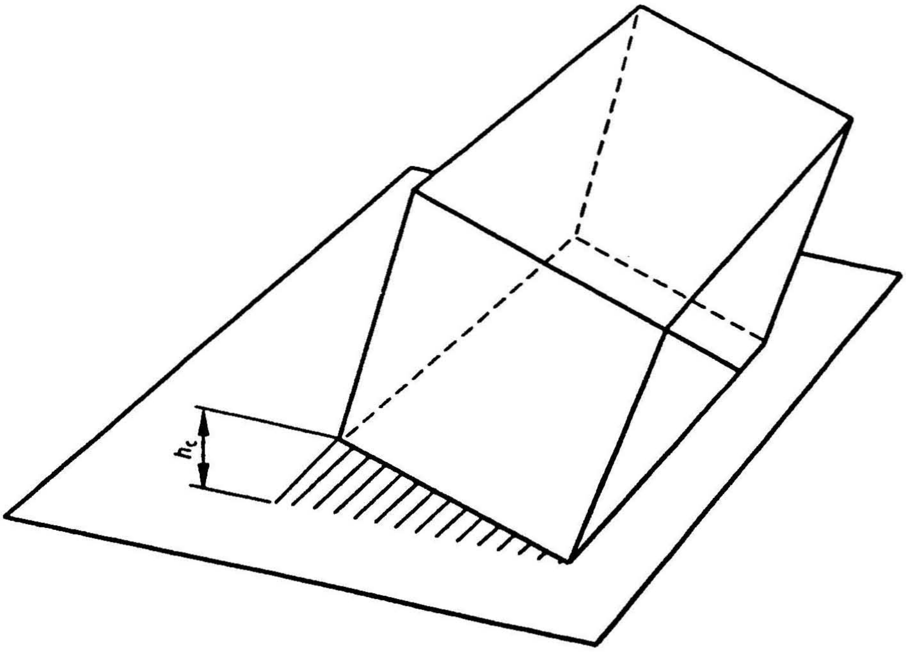
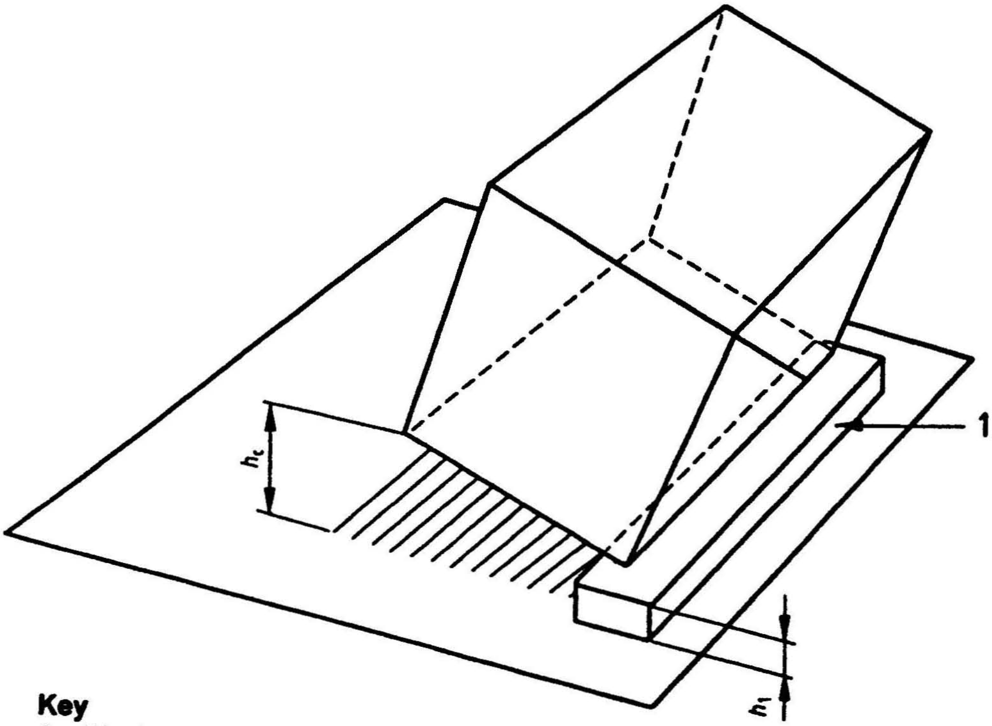
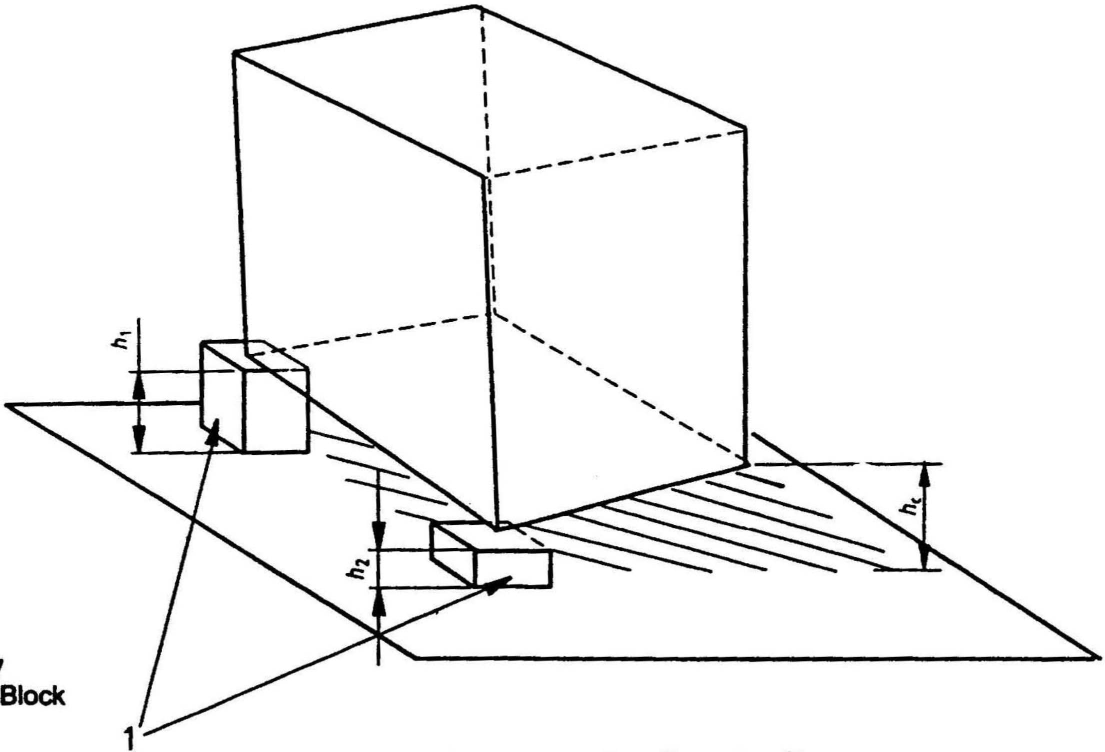


FIG. 1 METHOD A — FACE IMPACT TEST



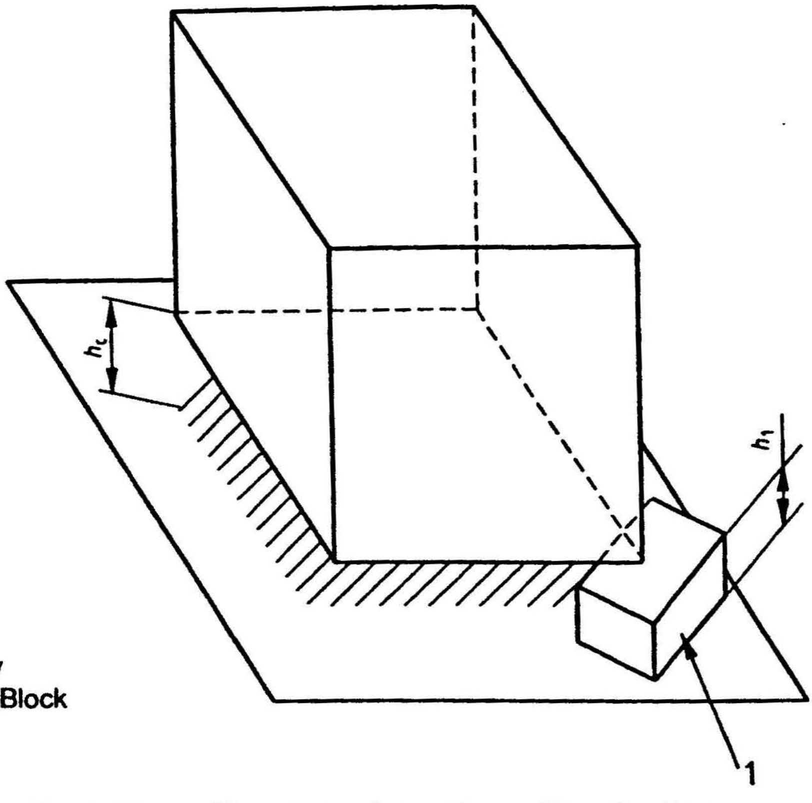
Key
1 Block

FIG. 2 METHOD B — EDGE IMPACT TESTS



Key
1 Block

FIG. 3 METHOD C1 — CORNER IMPACT TEST USING TWO BLOCKS



Key
1 Block

FIG. 4 METHOD C2 — CORNER IMPACT TEST — USING ONE BLOCK

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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